

Measuring GDP in a Digital Age

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Tracking America's Economy

- BEA mission for data reporting
 - Timeliness
 - Relevance
 - Accuracy/reliability
- Challenge is producing
 - Comprehensive
 - Consistent
 - And up-to-date accounts



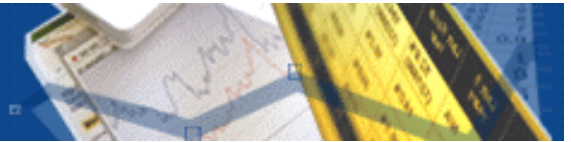
Tracking America's Economy

- Overall accuracy of GDP – good general picture of economy
 - Acceleration/deceleration
 - High/low growth
 - Sources of growth
 - Trends – saving, investment, government
- Mixed picture on cycles
 - Timing of turning points
 - Bias in trough and peak



Tracking America's Economy

- Rapid growth and change in:
 - Products and services
 - Prices
 - Incomes
 - Financial instruments and transactions
 - International trade and investment (outsourcing of jobs?)



Increase in Technology Related Growth: Real GDP and Productivity

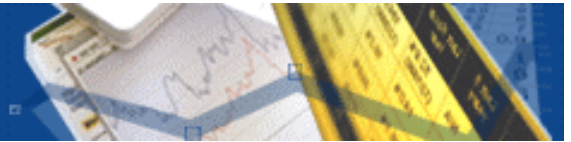
Contribution to Real Gross Domestic Product Growth

(Percentages)

	1995	1996	1997	1998	1999	2000	Average 1994-2000	Vs. Average 1970-1994
Percentage change at annual rate:								
Gross domestic product	2.50	3.70	4.50	4.20	4.50	3.70	3.85	3.12
Contributions to percentage points:								
Fixed investment								
Information processing equip. & software	0.56	0.67	0.83	0.83	0.85	0.75	0.75	0.32
Computers and peripheral equipment	0.34	0.35	0.37	0.38	0.37	0.20	0.34	0.14
Software ⁽¹⁾	0.10	0.17	0.32	0.24	0.30	0.20	0.22	0.08

Source: NIPA table 1.5.2.

1. Excludes software embedded or bundled.



Increase in Technology Related Growth: Prices

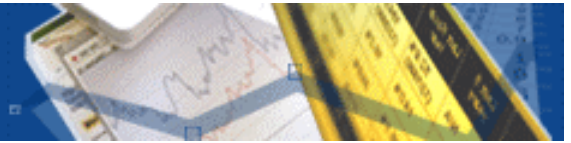
Contribution to Gross Domestic Purchases Price Growth

(Percentages)

	1995	1996	1997	1998	1999	2000	Average 1994-2000	Vs. Average 1970-1994
Percentage change at annual rate:								
Gross domestic purchases	2.10	1.80	1.40	0.60	1.60	2.50	1.67	5.22
Contributions to percentage points:								
Fixed investment								
Information processing equip. & software	-0.17	-0.30	-0.31	-0.42	-0.29	-0.14	-0.27	-0.05
Computers and peripheral equipment	-0.15	-0.25	-0.25	-0.30	-0.26	-0.14	-0.23	-0.08
Software ⁽¹⁾	-0.01	-0.03	-0.04	-0.04	0.02	0.05	-0.01	-0.01

Source: NIPA table 1.6.8.

1. Excludes software embedded or bundled.



Increase in Technology Related Growth: Consumption and Investment

Annual Growth Over Selected Periods

(Percentages - end of period to end of period)

	Price			Quantity		
	'90-'95	'95-'00	'00-'03	'90-'95	'95-'00	'00-'03
Personal consumption:						
Computers, peripherals, & software	-19.4	-28.0	-20.9	51.5	56.3	28.8
Computers & peripherals	-19.4	-30.4	-24.5	51.4	61.3	35.1
Software	-19.4	-19.2	-7.6	51.9	40.4	10.4
Private fixed investment:						
Computers, software, & comm. equip.	-5.7	-8.3	-4.7	15.8	24.8	3.0
Computers & peripheral equipment	-13.7	-21.6	-14.7	29.0	39.0	29.2
Software ⁽¹⁾	-2.7	-0.8	-0.2	12.4	19.7	1.2
Communication equipment	-1.2	-3.4	-2.9	8.4	18.4	-3.8

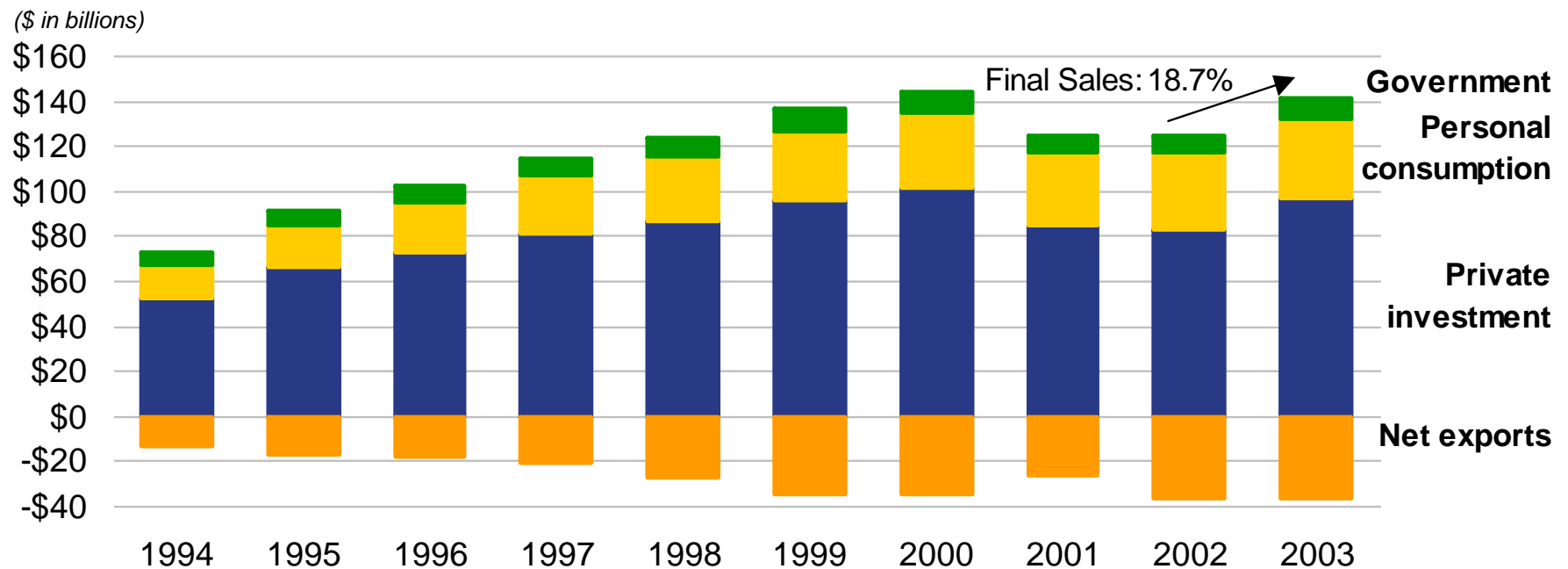
Source: NIPA tables 1.5.3, 2.4.4U, 2.4.6U, 5.5.4U, and 5.5.6U.

1. Excludes software embedded or bundled.



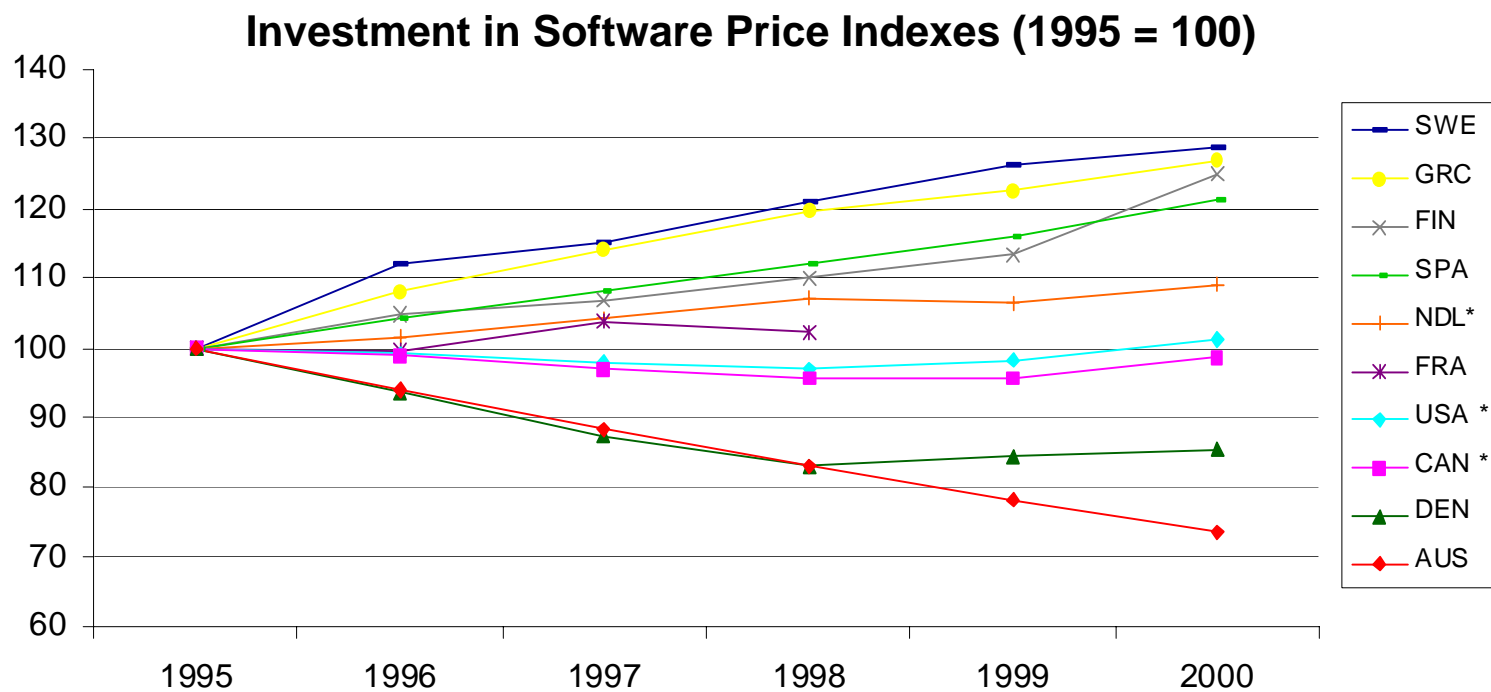
Increase in Technology Related Growth

Final Sales of Computers Composition



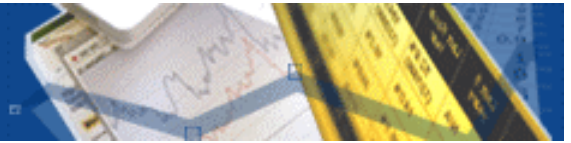
Source: NIPA supplemental estimates, nominal final sales of computers.

Problems in Measuring New Goods and Services: Software



Source: OECD.

* Estimated by OECD.



New Economy: Real or Statistical Mirage?

(Percentage)	Growth 94:IV-98:IV	
	Traditional Fisher index (Matched Model)	Hedonic
NIPA private fixed investment:		
Computers and peripheral equip.	----	-23.4
Personal computers	----	-32.5
Aizcorbe, Corrado, Doms (2000):		
Desktop personal computers	-30.6	-31.0
Notebook computers	-24.7	-26.3
Weighted average ⁽¹⁾	-29.1	-29.8

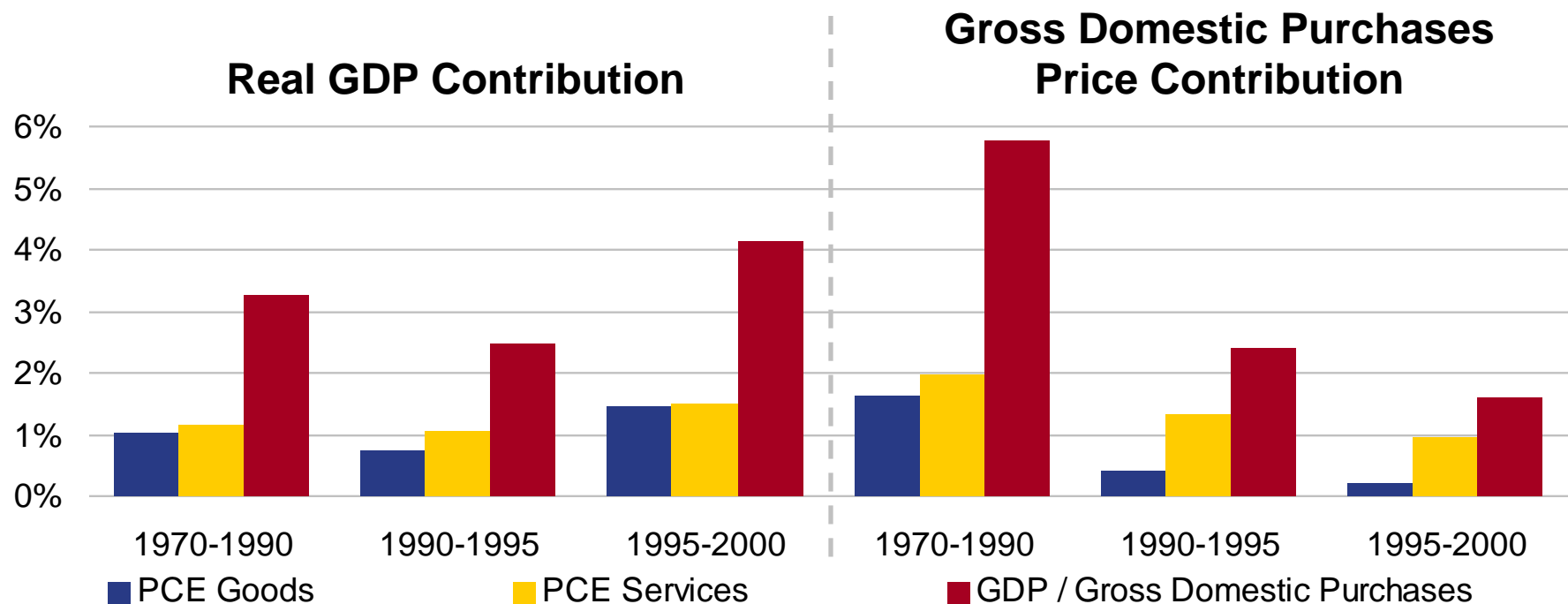
Source: Aizcorbe, Ana, Carol Corrado, and Mark Doms. "Constructing Price and Quantity Indexes for High Technology Goods." Federal Reserve System. Presented at the NBER Summer Institute, July 31-August 1, 2000.

1. Weights are 0.75 for desktops and 0.25 for notebooks.



Measuring Services: Prices and Output

Services consumption has made significant contributions to prices while real contribution has been relatively flat



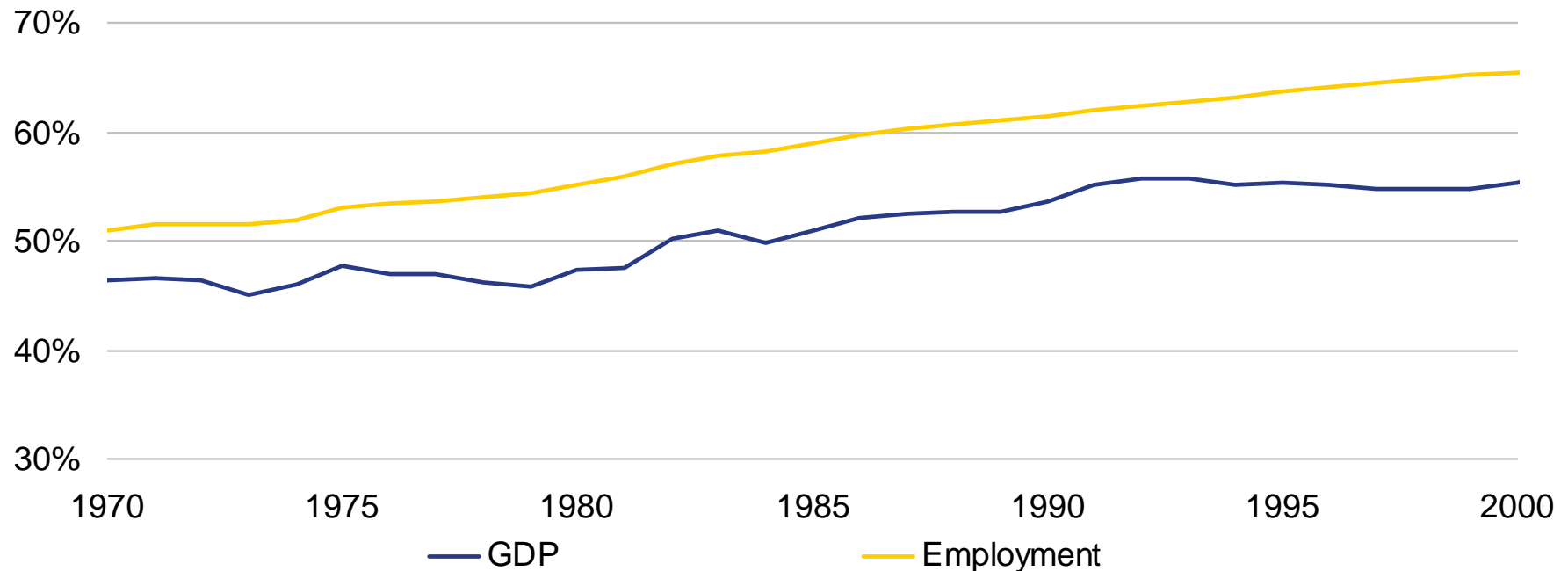
Source: NIPA tables 1.5.2 and 1.6.8.



Measuring Services: Prices and Output

The services industry is an increasing part of the economy

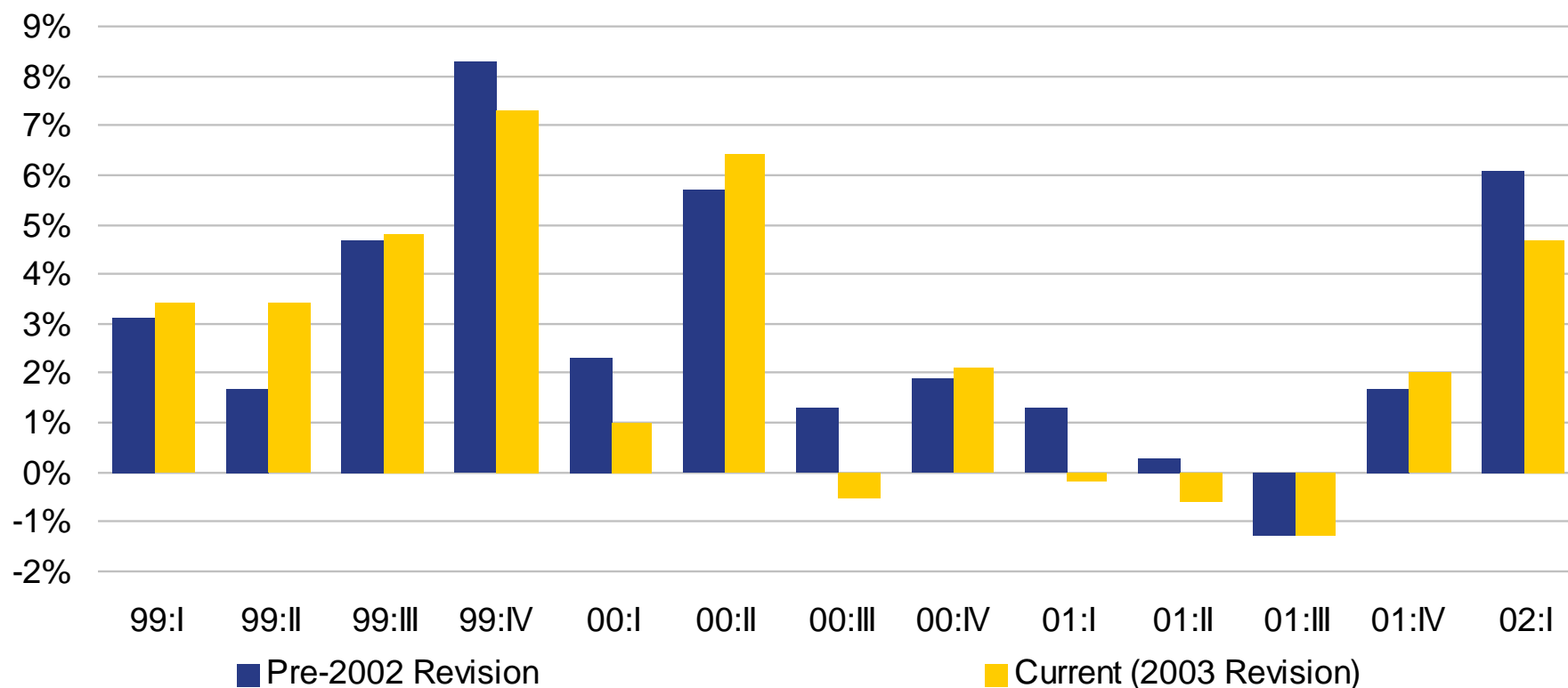
Services Share of Output and Employment



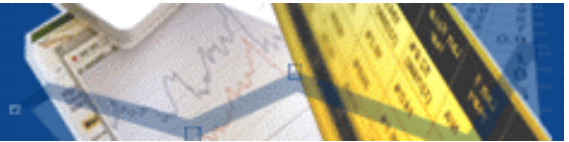
Source: NIPA tables 1.5.2 and Bureau of Labor Statistics CES Survey, total nonfarm employment and private service-providing employment.



Measuring Business Cycles: GDP Revisions



Source: BEA press releases.



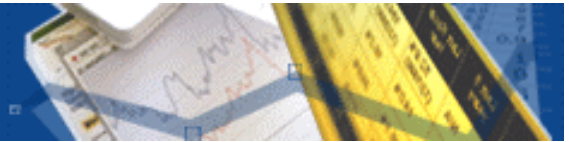
Regional Trends

While most industries and regions enjoyed stronger growth during the late 1990's...

(Percentages)

Region	Total GSP			Manufacturing			Services		
	'86-'94	'94-'00	Chg.	'86-'94	'94-'00	Chg.	'86-'94	'94-'00	Chg.
U.S.	2.7	4.3	1.6	2.9	4.7	1.8	3.3	3.8	0.5
New England	2.0	5.0	3.0	0.4	6.0	5.6	3.2	3.7	0.5
Mideast	2.0	3.5	1.5	1.1	2.7	1.6	2.6	2.5	-0.1
Great Lakes	2.6	3.5	0.9	3.1	3.0	-0.1	2.7	3.1	0.4
Plains	2.6	4.0	1.4	3.4	3.9	0.5	2.7	3.7	1.0
Southeast	3.2	4.0	0.8	3.4	1.8	-1.6	4.4	4.3	-0.1
Southwest	3.2	5.3	2.1	6.1	7.9	1.7	3.7	5.1	1.4
Rocky Mtns	3.6	6.1	2.5	5.1	7.9	2.9	4.5	5.5	1.1
Far West	2.8	5.4	2.7	2.4	10.8	8.4	3.5	4.5	1.0

Source: Real Gross State Product.



Regional Trends

Services and financial institutions have experienced relatively higher growth

(Percentages)

Region	Finance, Insur., & RE			Business Services			Durable Goods		
	'86-'94	'94-'00	Chg.	'86-'94	'94-'00	Chg.	'86-'94	'94-'00	Chg.
U.S.	2.5	4.9	2.3	4.3	7.7	3.4	3.5	8.0	4.5
New England	3.1	6.0	2.9	3.2	7.8	4.6	0.3	8.7	8.4
Mideast	3.2	5.3	2.1	1.7	4.7	3.0	1.2	4.6	3.4
Great Lakes	2.1	3.8	1.7	4.3	5.1	0.8	3.5	4.5	1.0
Plains	1.2	4.5	3.3	4.5	6.4	1.9	4.2	6.8	2.6
Southeast	2.4	5.2	2.8	7.0	8.6	1.6	4.6	6.6	2.0
Southwest	1.0	4.8	3.7	4.9	8.7	3.8	9.2	12.0	2.7
Rocky Mtns	1.9	7.1	5.2	8.0	10.0	2.0	6.1	10.9	4.8
Far West	3.0	4.3	1.3	4.6	10.6	6.1	2.3	14.9	12.6

Source: Real Gross State Product.



Regional Trends

Manufacturing is being replaced by the services and financial industries nationwide

(Percentages)

Region	Manufacturing			Services			Finance, Insur., & RE		
	'86	'94	'00	'86	'94	'00	'86	'94	'00
U.S.	19	18	15	16	20	21	17	18	20
New England	22	17	15	18	23	24	20	23	26
Mideast	16	14	12	19	22	23	21	24	27
Great Lakes	28	26	22	15	18	20	15	15	17
Plains	20	20	17	15	18	20	15	15	17
Southeast	20	19	16	14	18	20	15	15	17
Southwest	14	16	13	15	18	20	15	14	15
Rocky Mtns	12	13	12	16	19	21	15	15	17
Far West	15	13	14	18	22	23	20	21	21

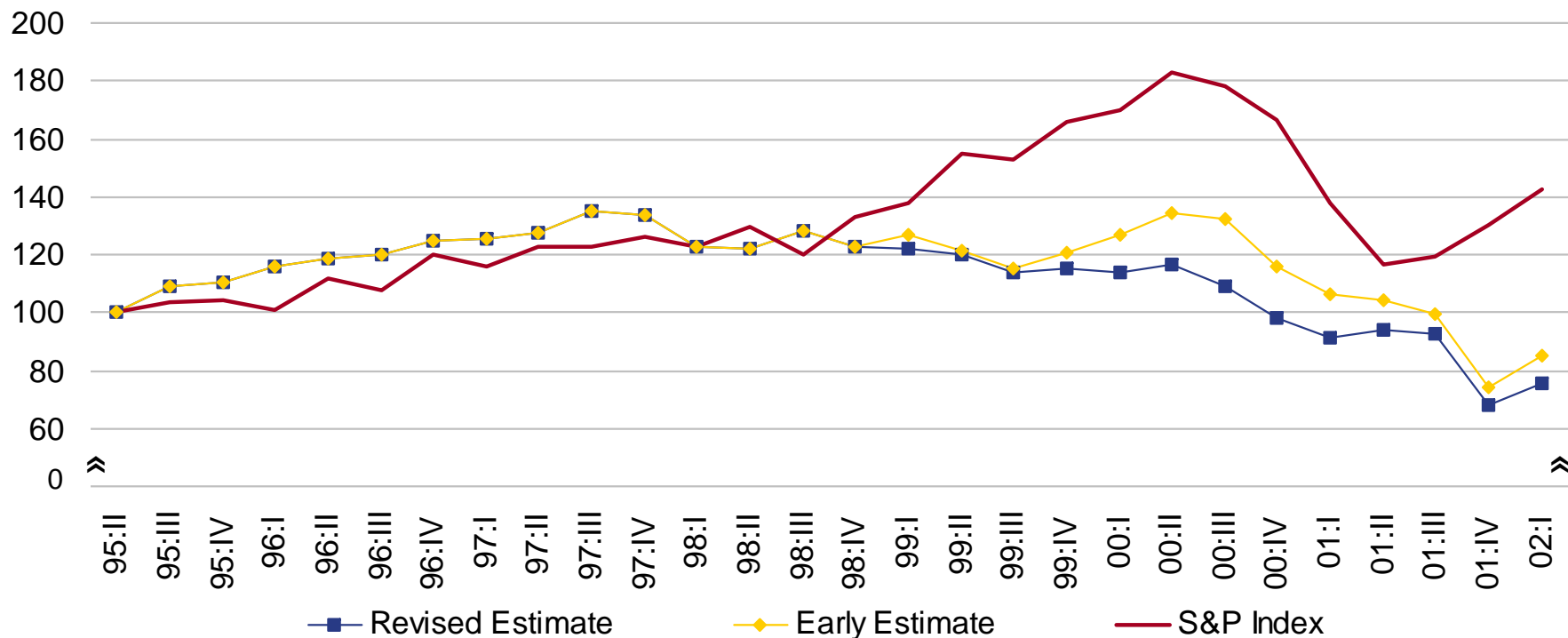
Source: Nominal Gross State Product.



Measuring Corporate Profits – 2002 Annual Revision

Corporate Profits Growth vs. S&P Index

(Indexed, 1995:II = 100)

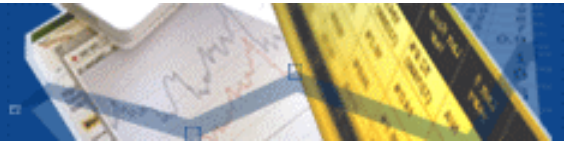


Source: BEA press releases and Standard & Poor's, Inc.



Current Topics: MNCs – Fact or Fallacy?

- U.S. multinational companies moving their production offshore to low wage countries?
- BEA data based on mandatory reports show that:
 - Share of U.S. MNC production, employment, and capital expenditures in the U.S. has remained roughly constant at 75 percent for over three decades
 - Roughly two-thirds of U.S. foreign direct investment is in high-wage countries



Tracking America's Economy – Continuing Challenges

- Expanded coverage of services output and prices
 - Census data on finance, insurance, utilities, real estate, and a large share of transportation are only available once every 5 years, ~\$1 T of 2003 GDP
 - Data on producers prices cover roughly 50% of service industry prices
- Expanded coverage of all types of wages and salaries
 - Monthly payroll data cover primarily the wages and salaries of hourly workers, who account for a little over half of wages and salaries in today's economy



Tracking America's Economy – Continuing Challenges

- Updated measures of profits
- Improved coverage of trade
- More timely data on industries, international trade, regions and states
- Integration of U.S. economic accounts
 - Incomplete integration and inconsistencies reduce their usefulness
- Data sharing